

**IN THE CLAIMS:**

1           1. (Original) A method for programming a pattern matching engine having a plu-  
2   rality of information storage entries with one or more regular expressions, each regular  
3   expression including a plurality of characters and having a corresponding action to be  
4   applied to matching strings, the method comprising the steps of:  
5           identifying one or more borders within a given regular expression, the one or  
6   more borders separating the given regular expression into a plurality of sub-expressions,  
7   at least one sub-expression having a plurality of sequential characters; and  
8           loading one or more entries of the pattern matching engine with a plurality of the  
9   sequential characters from at least one sub-expression, wherein  
10          the borders are defined by a predetermined sequence of regular expression  
11   metacharacters.

1           2. (Original) The method of claim 1 wherein the predetermined sequence of regu-  
2   lar expression metacharacters are a wildcard metacharacter followed immediately by a  
3   repeat last character zero, one or more times metacharacter.

1           3. (Original) The method of claim 1 further comprising the step of organizing at  
2   least part of the pattern matching engine into a plurality of sections, and wherein each  
3   section of the pattern matching engine is loaded with a plurality of search patterns for a  
4   corresponding sub-expression.

1           4. (Original) The method of claim 3 wherein the entries of a given section are  
2   loaded with one of a search pattern that includes a complete match of the respective sub-  
3   expression, a search pattern that includes a partial match of the respective sub-expression,  
4   and a mismatch pattern.

1           5. (Original) The method of claim 4 further comprising the steps of:  
2           associating at least one sub-expression with a current state variable; and  
3           loading the associated current state variable into each entry of the section of the  
4           pattern matching engine that contains the at least one sub-expression.

1           6. (Original) The method of claim 5 wherein the pattern matching engine has at  
2           least one content addressable memory (CAM) loaded with the one or more regular ex-  
3           pressions.

1           7. (Original) The method of claim 6 wherein  
2           the CAM is a ternary content addressable memory (TCAM) that supports don't  
3           care values, and  
4           the mismatch pattern includes all don't care values.

1           8. (Currently amended) The method of claim 7 wherein  
2           each regular expression is associated with an action,  
3           the pattern matching engine further includes a second memory device having a  
4           plurality of entries, and  
5           the entries of the second memory device are loaded with the actions associated  
6           with the one or more regular expressions.

1           9. (Original) The method of claim 8 wherein each entry of the TCAM identifies a  
2           corresponding entry of the second memory device.

1           10. (Original) The method of claim 9 wherein at least one TCAM entry is associ-  
2           ated with a next state variable, the method further comprising the step of loading the en-  
3           try of the second memory device that is identified by the at least one TCAM entry with  
4           the associated next state variable.

1           11. (Original) The method of claim 10 wherein  
2           the at least one TCAM entry is located in a TCAM section whose entries are as-  
3           sociated with a current state variable having a first value, and  
4           the next state variable has a second value that differs from the first value, thereby  
5           specifying a new TCAM section to be searched.

1           12. (Original) The method of claim 11 wherein each TCAM entry has a match  
2           cell that contains the complete match, the partial match or the mismatch pattern.

1           Claims 13-20. (Canceled)

1           21. (New) The method of claim 1 wherein  
2           each regular expression is associated with an action,  
3           the pattern matching engine further includes a second memory device having a  
4           plurality of entries, and  
5           the entries of the second memory device are loaded with the actions associated  
6           with the one or more regular expressions.

1           22. (New) The method of claim 21 wherein  
2           the pattern matching engine has at least one ternary content addressable memory  
3           (TCAM) that supports don't care values, the TCAM loaded with the one or more regular  
4           expressions, and  
5           each entry of the TCAM identifies a corresponding entry of the second memory  
6           device.

1           23. (New) The method of claim 22 wherein at least one TCAM entry is associated  
2           with a next state variable, the method further comprising the step of loading the entry of  
3           the second memory device that is identified by the at least one TCAM entry with the as-  
4           sociated next state variable.

1           24. (New) The method of claim 23 wherein  
2           the at least one TCAM entry is located in a TCAM section whose entries are as-  
3           sociated with a current state variable having a first value, and  
4           the next state variable has a second value that differs from the first value, thereby  
5           specifying a new TCAM section to be searched.

1           25. (New) The method of claim 24 wherein each TCAM entry has a match cell  
2           that contains the complete match, the partial match or the mismatch pattern.